Do Notional Defined Contribution Accounts Make Sense as Part of the Old-Age Security Mix for China?

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ABSTRACT. Until quite recently, the Chinese pension system was an enterprise-based, pay-as-you-go, defined benefit scheme. In 1995, the decision was made to shift to a multi-pillar scheme that included a second funded defined contribution pillar. The transition is proving difficult.
This article outlines an alternative second pillar that may make more sense for China, a pay-as-you-go notional defined contribution (NDC) pillar. This article has three goals: (1) to provide a brief history of pension policy in China, (2) to describe the NDC model, and (3) to assess the relative merits of the NDC alternative as a possible option for China. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www.HaworthPress.com> © 2004 by The Haworth Press, Inc. All rights reserved.]

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INTRODUCTION

In the year 2000, approximately 7% of the Chinese population was age 65 or over (SSB, 2001). Given mandatory retirement at age 60 for male employees (55 for females), we focus on the size of the population age 60 and over when discussing population aging. The proportion of China’s population over age 60 was 9% in 1990 and is projected to increase to 22% by 2030 (Wang, Xu, Wang, & Zhai, 2001). By 2025, about 290 million people, 24% of the world’s population age 60 and over, will be living in China (U.S. Census Bureau, 2002; Kinsella & Velkoff, 2001). In short, the success or failure of China in providing old-age pensions in the decades ahead will have profound implications for a major fraction of the world’s elderly population.

While China’s overall population will grow at a decreasing rate over the next few decades, the elderly population will continue to grow at an increasing rate. The old age dependency ratio in China is projected to increase from .11 in 1999 to .25 in 2030 (Wang et al., 2001). The ratio of retirees to covered workers increased from .03 in 1978 to .29 in 2001 and is projected to increase to .55 by 2030 unless changes are made (Keran & Cheng, 2002). China’s one-child policy and increasing life expectancy will lead to more couples being the primary supporters of two sets of parents (his and hers) and in many cases one or more grandparents as well. These changes and the extensive migration from rural to urban areas are among the factors contributing to the breakdown of the extended family support system, which has traditionally been a major source of old-age security provision in China (Friedman, James, Kane, & Queisser, 1996; McCarthy & Zheng, 1996).
China’s enterprise-based, pay-as-you-go defined benefit (PAYGO DB) scheme in place prior to the mid-1990s was not adequate to meet the needs of the nation’s rapidly aging population in the context of the transition from a planned to a market economy. Currently, there is much support for the recent introduction of a multi-pillar scheme that calls for both a mandatory PAYGO DB flat pension first pillar and a mandatory funded individual defined contribution (DC) second pillar. However, there is less agreement about how to finance the transition from the old PAYGO DB scheme to a new scheme that includes both a DB pillar and a DC pillar. In this article, we explore the potential utility of an innovative new approach referred to as the notional defined contribution (NDC) model as part of the solution to China’s current social security policy impasse. In the first section of this article, we present a brief history of China’s old age social security system. In the second section, we describe the NDC model. In the third section, we assess the relative merits of this model as a possible pillar to be included as part of the Chinese social security system.

**A BRIEF HISTORY OF CHINA’S SOCIAL SECURITY SYSTEM**

Prior to the early 1950s, old-age security provision throughout China was the responsibility of the multigenerational extended family (Li, 1999). In 1951, soon after the founding of the People’s Republic of China, an old-age security system was introduced for certain categories of urban workers. Between 1953 and 1969, these pensions were financed by a 3% contribution by enterprises, 30% of which went to a national pool, and the remaining 70% went to a local pool, where trade unions (the pension fund administrators) allocated the benefits to current retirees (Davis, 1988; Takayama, 2002). Coverage was provided for workers in state-owned enterprises (SOEs), government workers, and the employees of large urban collectives. In part because the labor force was so young, very few workers became eligible for pension benefits prior to the early 1970s (West, 1997). In 1969, the scheme was decentralized as the trade unions were disbanded and the national pool, which had functioned as a form of pension reserve funding, was used for other purposes (Sin, 2000). As a result, the pension system became an entirely enterprise-based PAYGO DB scheme with each SOE expected to provide pension benefits for its retired employees (Davis, 1988). The SOEs also provided a variety of in-kind benefits (housing, health care, etc.) out of current revenues during the retirement years.
Typically, workers ended up with pensions that replaced approximately 80% of their final (albeit very modest) salaries. However, these pensions were not indexed until quite recently. As a result, during periods of high inflation these pensions sometimes lost much of their purchasing power (Leckie, 2000; West, 1997).

As China began to move from a command to a market economy starting in 1978, productivity discrepancies began to emerge among the various SOEs, leading to substantial differences in pension benefit levels. By the early 1980s, this lack of unification and integration had become a problem. It was negatively affecting productivity and had become an obstacle to labor mobility because pension eligibility credit was not portable when workers moved from one employer to another (Naughton, 1995; Bottelier, 2002).

Between 1982 and 2000, the Chinese government initiated a series of experimental pension programs designed to increase the level of integration of the nation’s highly fragmented social security system. Much attention was given to schemes based on municipal pooling. This pooling was an effort to deal with the problem many SOEs were having when they sought to provide pensions to their former workers while the number of current workers was rapidly contracting. The hope was that pooling would make it possible for successful new enterprises to offset the pension obligations in declining industries in the same city (or province). However, when a relatively high proportion of the local enterprises were in declining industries, an analogous financing problem soon emerged at the municipal level (James, 2002).

In 1995, State Council Document 6 outlined a new multi-pillar pension scheme. One was a mandatory social pooling pillar, a variant of the prior PAYGO DB scheme. The second, also mandatory, was purported to be a fully funded DC pillar (Keran & Cheng, 2002). Since 1995, this scheme has been specified and modified in various ways.

State Council Document 26, promulgated in 1997, calls for a multi-pillar scheme financed by a total contribution rate of 28% with the employer paying 23% of wages and the employee 5%. Of this, 17% (from the employer’s share) is used to finance the mandatory first pillar, a basic PAYGO DB flat pension. The mandatory second pillar is supposed to be a funded individual accounts DC scheme financed by a 5% contribution from the employee and an additional 6% from the employer for a total of 11%. At retirement, the cumulative sum of contributions and earnings on those contributions will be divided by 120 (12 months times 10 years) to define a monthly benefit that the retiree will receive for the rest of his or her lifetime. In light of the relatively early
retirement age and increasing life expectancy in China, this pension will be substantially more generous than an annuity based on life expectancy at retirement and the same retirement assets. Unless changes are made, pensions based on the current formula will not be sustainable over the long run and will require supplementation from the social pool and/or the central government.

These first two pillars together are expected to replace approximately 59% of the worker’s pre-retirement wage (Ministry of Labor and Social Security, 1998; Zhao & Xu, 2002). The scheme also includes a voluntary third pillar based on tax incentives for both the employer and the employee to make contributions to individual accounts managed primarily by government-owned life insurance companies (Leckie, 2000). This third pillar is limited primarily to a small number of foreign investment enterprises and plays such a small role that the Chinese scheme is often described as being two-pillared.

State Council Document 42, promulgated in 2000, calls for a much more unified national scheme. In response to this document, a pilot program was introduced in Liaoning Province (and some municipalities outside of Liaoning) in 2001 with the goal of extending it nationwide at some point if it seems to be working well and feasible to do so (Keran & Cheng, 2002).

The first pillar of this pilot program is a basic PAYGO DB flat pension set at about 20% of the provincial average wage (which varies considerably from province to province due to uneven development) for those who had been in covered employment for 15 or more years. It is being financed by a payroll tax contribution on employers (in China they do not refer to these contributions as taxes), the size of which varies from one municipality to another (Fox & Palmer, 2001; James, 2002). The employer contribution rates are the same within a municipality, but vary from about 19% to 29% among municipalities. The national average is approximately 20%; however, due to the current lack of integration, it varies considerably from one municipality to another (State Council Information Office, 2002). For those workers who have accrued rights under the prior PAYGO DB scheme, an additional benefit is added to this DB pillar.

The second pillar of this scheme is a fully funded DC pension to be derived from an annuity based on the amount accumulated in the worker’s individual account at the time of retirement. This pillar is funded by the 8% payroll tax on employees. For SOEs that pay very low wages, employees contribute only 5%, with the other 3% being contributed by the employer. Currently, this money is deposited in govern-
ment-owned banks and invested in a special category of government bonds that pays low rates of return, but does protect these assets against inflation (James, 2002).

Currently, there is a substantial discrepancy between what recent State Council documents call for and what is actually going on. In Liaoning Province, the 8% contribution from workers is, in most cases, being deposited into these individual accounts. The same is true for some covered workers in some of the other provinces. But in most municipalities and provinces the payroll taxes on employees are not being deposited into these individual accounts because money is urgently needed to pay benefits to current pensioners. Individual accounts are, however, being set up, and a record is being kept of what the employee has contributed. Some analysts describe the resulting accounts as notional pension accounts (World Bank, 1997). In the few areas where deposits are being made into funded accounts, the contribution is typically from the 8% payroll tax on the employee with no contribution from the employer.

It is proving difficult to implement some of the key components of reforms recently promulgated by the Chinese government. One problem is finding a way to make the “double payments” associated with a transition from a relatively mature PAYGO DB scheme to a partially funded scheme (World Bank, 1997). How does the pensions system make up for the 8% being contributed by workers if it is diverted into funded individual accounts when those contributions are urgently needed to pay pension benefits to the currently retired? In Liaoning Province, about one-third of the gap created by this diversion is made up by the central government, about one-third by the provincial government, and about one-third by the employers. A problem with this solution as a model for the nation is that the central government does not have the resources to contribute its one-third throughout the nation as a whole. In many municipalities, even when all of the employee contributions are appropriated to help pay benefits to current pensioners, the revenues are still insufficient. In an increasing number of municipalities, substantial infusions of additional revenues are required from the central government (Pritchard, 2001).

The current pension scheme in China is largely urban-based; for most rural residents, family care is still the primary resource for old-age security. Even in urban areas, the coverage is modest when compared with industrialized countries (Kinsella & Velkoff, 2001). In 2000, there were 213 million employed urban workers, but only 105 million (or less than 50%) were covered by the formal old-age security system (SSB, 2001).
Those who are covered by the system are primarily employees of SOEs. Currently, there are approximately 36 million pensioners making the ratio of pensioners to current employees covered by the formal system 1 to 2.9. The non-state sector, which is the most dynamic sector in China’s economy, accounts for more than half of employment in many localities but has very limited pension coverage (World Bank, 1997).

The current reform effort is plagued by excessive fragmentation and uneven benefits throughout the country and even within the same province. The first pillar flat pension benefit varies from one province to another, as does the mechanism used to index pensions (James, 2002). Only a small number of large developed municipalities have so far succeeded in developing integrated pension systems, cities such as Beijing, Shanghai, Tianjin, and Chongqing (Bottelier, 2002). For a number of reasons it is proving difficult to integrate urban pension schemes at the provincial level. One reason is the uneven levels of economic development among regions within the province. Another is variation in the age structure of the labor force among different regions of the province and different sectors of the economy. Integration is especially difficult for provinces with large numbers of declining SOEs. The introduction of an NDC pillar could be an important part of the solution to the social security problems China is facing.

**THE NDC MODEL**

In 1981, Chile became the first nation to shift from a PAYGO DB scheme to a mandatory funded defined contribution (DC) scheme. This example shaped reforms during the 1990s in several other nations, particularly in Latin America (Kay & Kritzer, 2002; Kritzer, 2000; Williamson, 2001). However, the mid-1990s also saw the emergence of yet another innovative pension-funding model based on the concept of notional accounts. Since then schemes based on the notional defined contribution (NDC) model have been introduced in Sweden (1999), Italy (1995), Poland (1999), Latvia (1996), Mongolia (2000), and the Kyrgyz Republic (1997).

The NDC model in many ways can be viewed as a hybrid combination of the PAYGO DB model and the funded DC (FDC) model. Like the PAYGO DB model, the NDC model uses funds obtained from pay-roll taxes to finance pensions for the currently retired. However, unlike the PAYGO DB model and more like an FDC model, the NDC model establishes an individual (albeit unfunded) account in which the em-
ployee is credited for these contributions without any hard assets actually being deposited. The structure of NDC accounts assures a much closer link between contributions and benefits than is typically the case with its PAYGO counterpart (Cichon, 1999). The size of payroll tax contributions varies from one country to another. In some, such as Sweden, employers and employees contribute the same amount to the notional accounts; more commonly the employer contributes substantially more. In Sweden, for example, there is a payroll tax of 18.5% split equally between the employer and the employee. Of this, 16% is credited to the worker’s NDC account (Palme, 2003). In the Kyrgyz Republic, the payroll tax is 29% with the employer contributing more (24%) and the employee less (5%) (P. Castel, personal communication with author, July 5, 2002).

With FDC schemes, returns are based on trends in capital markets, but with NDC schemes, returns (indexing) must be based on trends in the wage sum (the aggregate wages of all covered workers) or some other wage linked indicator if the system is to be sustainable. In Sweden and Mongolia, for example, the indexing is based on changes in wage levels (Disney, 1999; Bender & MacArthur, 2000), while in Poland indexation is 75% of the wage sum (Chłoń-Domińczak, 2002). In Italy the indicator is GDP growth (Franco, 2002). In addition, after retirement, pensions must be indexed to adjust for changes in the standard of living (wage increases) and/or inflation (price increases). In Sweden the formula takes into consideration both inflation and changes in the rate of economic growth (Palmer, 2002), while in Italy and Latvia pensions are indexed for inflation only (Hamann, 1997; Castel & Fox, 2001).

Nearly all NDC schemes have provisions calling for the adjustment of pension benefits when the notional balances are annuitized at retirement as a function of changes in life expectancy. For example, with the Swedish NDC pillar, if the life expectancy of a worker’s cohort increases (as measured when the cohort reaches age 65), this will tend to reduce the size of the monthly pension in order to adjust for the projected increase in the average number of months the pension will be received (Sundén, 2000). With traditional PAYGO DB schemes, such automatic adjustments could be made, but typically they are not; however, in recent years many such schemes have increased the age of eligibility for full retirement benefits, a change that has some of the same consequences.

The structure of the NDC schemes provides incentives for workers to remain in the workforce longer. For example, in Italy, the replacement rate will increase for those who remain at work until age 65 to 74% un-
der the Dini reforms (the new NDC scheme) vs. 66% under the Amato reforms (the prior scheme) (Brugiavini & Fornero, 1998).

In most countries, the NDC scheme is one pillar of a multi-pillar old-age security system that also includes an FDC pillar. For example, of Sweden’s 18.5% total payroll tax contribution, 16% goes to the notional accounts, but the remaining 2.5% goes to finance funded individual DC retirement accounts.

While many PAYGO DB social security schemes (or pillars in multi-pillar schemes) are structured to be redistributive, NDC pillars are designed not to be redistributive. If there is to be redistribution, a separate minimum pension pillar is needed, and most nations with multi-pillar NDC schemes include such a pillar.

**DOES THE NDC MODEL MAKE SENSE FOR CHINA?**

Since these NDC schemes are new, there is currently little concrete evidence about how these schemes work in actual practice. In any effort to assess the NDC model, it is important to consider contextual factors. In the discussion that follows, we briefly review a number of the purported strengths of the NDC model in general and then qualify these arguments when applied to China. China has its own unique policy legacy and its own current demographic, economic, and political constraints. When assessing the NDC model, sometimes the comparison will be with a PAYGO DB scheme (or pillar) and sometimes with a funded defined contribution scheme (or pillar). For China, the NDC model would most likely be viewed as a temporary (or maybe long-term) replacement for the “funded” defined contribution pillar (that for most workers is not being funded).

A strength of the NDC model relative to the PAYGO DB model is that it does a better job of keeping pension benefits in balance with available payroll tax revenues. Most countries that have adopted the NDC model have done so with the expectation that it would help avoid the dramatic increases in payroll taxes that were projected in connection with their prior PAYGO DB schemes. Sweden, for example, expects to be able to maintain its current 18.5% payroll tax rate indefinitely as a result of the switch to its new scheme. The current payroll tax burden in China is already quite high. To the extent that the NDC model could be used to keep it from increasing, this would be a benefit for China. To the extent that the NDC model might be used actually to lower these tax burdens in the years ahead, albeit at the cost of lower wage replacement
rates, some government planners will see this as a benefit. However, this view may not be shared by those workers who are most dependent on these pension benefits for retirement income. It is likely that eventually the NDC pillar would evolve into two separate pillars, one a diminished NDC pillar and the other an FDC pillar. Were this to happen, in the long run, this could lead to lower payroll taxes due to higher long-run returns on the funded pillar.

The NDC model does not by itself offer a short-term solution for a nation (such as China) that faces a serious current imbalance between revenues and pension benefits (Valdés-Prieto, 2000). However, most countries that have turned to the NDC model have done so at a time when their pre-existing PAYGO DB schemes were in financial imbalance. By devising methods to cope with short-term pension financing problems via a basket of other reforms introduced at the same time as the NDC scheme, many nations have been able to bring their pension schemes into balance albeit by what amounted to a partial default on prior pension promises. While in the long run the NDC model would provide a mechanism to help keep the Chinese pension system in balance, in the short-run it would (at least by itself) be of little help in closing the gap between current payroll tax revenues and pension obligations. For the NDC model to work in China, it would be necessary to find other mechanisms (such as reducing wage replacement rates or increasing the age of eligibility) to bring the pension scheme into fiscal balance.

All NDC schemes are equipped to deal with changes in the rate of economic growth, changes in wage levels, and population aging, while some also maintain provisions designed to manage fluctuations in the size of the labor force. For example, the Latvian and Polish schemes automatically adjust benefits to compensate for any changes in the number of workers paying into the system. While the structure of NDC schemes allows them to make automatic adjustments in pension benefit levels based on demographic fluctuations and economic cycles, it is not assured that such schemes will always be able to maintain a balance based on these provisions. For such contingencies, some nations, such as Sweden, have implemented a reserve fund that includes assets that could be liquidated in case of fiscal emergency. In addition, Sweden has special provisions that allow less generous indexing of notional balances if the imbalance rises above a specified level. In Poland, revenues from surpluses in the PAYGO system and one percentage point of the payroll tax, for the years 2002 to 2008, are being used to build up a special reserve fund for just such contingencies (Chłoń-Domińczak, 2002).
The case of China, the NDC’s built-in mechanisms (often without requiring additional legislation) for dealing with population aging, changes in life expectancy, and regional differences in wage levels would be definite strengths given the rapid population aging that is anticipated over the next few decades.

Some have argued that an FDC pillar would be more transparent than an NDC pillar because the worker would know exactly how much money is in the account at any given time. With an FDC pillar there are hard assets, not just notional credit in those accounts. While the FDC model is in this sense transparent due to the dependence of FDC pensions on trends in financial markets that are subject to considerable volatility in emerging market economies, it is likely that the NDC schemes will often offer more accurate projections of eventual pension benefits. The PAYGO DB model can be made transparent, as it has in the United States with its annual reports to covered workers. However, given the de facto partial default in connection with pension obligations linked to China’s prior enterprise-based PAYGO DB scheme, many Chinese workers may question the transparency of a scheme or pillar based on the PAYGO DB model for anything except the flat minimum pension first pillar of the current scheme.

This transparency of an NDC scheme, with its explicit link between pension size and payroll tax contributions, provides an incentive to remain in the workforce longer (Gray & Weig, 1999). This is a plus for nations that see early retirement as a problem and longer labor force participation as an important part of keeping the social security system solvent.

However, for China this incentive to remain in the labor force would be a mixed blessing. It would help reduce the anticipated pension burden associated with population aging. But this benefit would come at a cost. The Chinese government believes that if workers remain in the labor force longer, the number of jobs open to younger workers will be reduced, making it more difficult to deal with the nation’s problem of high unemployment (Bottelier, 2002). While policymakers in China are concerned about the anticipated pension burden over the next few decades, they are even more concerned about the problem of unemployment among young workers. The evidence suggests that the potential consequences (including labor unrest and political instability) associated with high rates of unemployment among younger workers means that the incentive under an NDC scheme to remain in the labor force would most likely be viewed very negatively by Chinese policymakers. China’s policy of mandatory retirement at age 60 for men (55 for women) would
help blunt the potential impact of the incentive to remain at work, but it would do so at the cost of undercutting one of the major reasons for introducing an NDC scheme.

NDC schemes are often viewed as a first step in a process that will eventually lead to the introduction of a substantial FDC pension pillar. Due to the lack of maturity of its financial markets, the small number of asset management organizations, and the lack of well-trained personnel to regulate the financial industry, China may not yet have the infrastructure needed to make a major FDC pillar work well. In China, the banking system is weak, and capital markets are volatile (James, 2002). There are serious problems of insider trading in connection with the stock market, and many of the banks are close to being insolvent. However, if an NDC scheme were introduced before such financial infrastructure was fully in place, it might provide a stimulus for the development of such institutions, particularly in the context of a multi-pillar scheme that includes a funded defined contribution pillar that starts small and increases over the years as internal financial markets and institutions mature.

An advantage of the NDC model over the FDC alternative is that it would help ease the impact of the transition cost (World Bank, 2001). When such a transition is being made, a way must be found to compensate for the funds being redirected into funded individual accounts. One politically unpopular option is to cut pension benefits. Another unpopular option is to increase the payroll tax contribution. It may be easier to make needed benefit cuts in China than in a democratic country. However, that does not mean it will be easy; the Chinese government cannot ignore public sentiment and the potential for civil unrest. With the NDC model, any funded component can be eased in gradually over a much longer period of time, spreading the transition burden over more generations of workers. This may become a major argument in favor of the NDC model for China, where it is proving all but impossible to find the money to put into the funded individual accounts that are by statute part of the current scheme. Workers are being told that their payroll tax contributions are supposed to be directed into their individual funded accounts, but it is common knowledge that in reality for most workers the money is not going there; it is instead being used to pay pensions to those who are retired. This discrepancy between what the statutes call for and what is actually going on must make Chinese social security experts uneasy since it is likely to discredit the concept of funded individual accounts.

The lack of redistribution in the NDC model is a serious limitation in the eyes of those who are concerned about the potential consequences
for women (particularly single women) and low-wage workers. This is a limitation that distinguishes both the NDC model and the FDC model from the typical PAYGO DB model. The lack of redistribution in the NDC model makes it likely that many low-wage workers will become worse off under an NDC scheme than under pre-existing PAYGO DB schemes, unless, as in Sweden, it is a multi-pillar scheme that also includes a generous minimum pension. Were a NDC pillar to replace the current FDC pillar in the Chinese scheme, the PAYGO DB first pillar would provide some redistribution, but the amount would be modest by Swedish standards.

In most countries, women, particularly low-wage single women, will generally be worse off under NDC schemes than under prior PAYGO DB schemes, although they are likely to be better off under NDC schemes than under FDC schemes. Because women tend to have lower wages, irregular work histories, and fewer years of full-time employment, they can generally expect fewer annuity benefits at retirement than their male counterparts. Benefit provisions designed to discourage early retirement also are detrimental to women workers.

In China, women would probably be at least marginally better off under an NDC scheme (or pillar) than under a comparable FDC scheme (or pillar). But would they be better off with an NDC pillar than with a PAYGO DB pillar? Under the current multi-pillar scheme in China, the first pillar is a PAYGO DB scheme that provides a basic minimum pension. There is no reason to believe that an NDC pillar would represent an improvement for this pillar because the DB pillar is designed to provide a minimum pension and does not reflect wage differences among workers. However, there is reason to believe that an NDC pillar would represent an improvement, particularly for women, over the second “funded” DC pillar in the current scheme. One reason is that it would assure that contributions to that pillar would accrue returns reflecting changes over time in wage levels. Depending on how it was structured, it could also provide some notional credit to those individuals, typically women, caring for children. However, given that most Chinese women work and few are at home taking care of children, it is possible that there would be little if any notional credit for time out of the labor force taking care of children or elderly parents. Also, if we assume that at some point these funded accounts did get assets that could be invested in financial markets, this would make such assets vulnerable to fluctuations in financial markets. At that point, most workers, particularly women and other low-wage workers, would be better off with the NDC alternative,
which would not be so vulnerable to financial market fluctuations and would make eventual pension benefits more predictable.

A major disadvantage of the NDC model relative to the FDC model is that the scheme is not structured so as to become a source of investment capital. The Chinese government is very interested in doing all it can to foster economic growth because growth is a source of jobs and wealth that can be used to deal with any number of future social welfare needs. Most economists agree that a substantial increase in the level of national savings and investment is likely to translate into more rapid long-term economic growth. An FDC model is a potential source of such investment capital, but the NDC model is not by itself a potential source of such investment capital. Because NDC balances are notional, not capitalized, they contribute nothing to the national savings rate, and perhaps, as studies in Sweden indicate, may even have a negative effect on the savings rate (Sundén, 2000). This would happen if the accumulation of substantial notional balances in the NDC accounts had the effect of reducing the level of privately funded savings. For this reason it is at least possible that there would be little if any economic boost or increased long-term economic growth as a result of implementing an NDC system or pillar in China.

While NDC accounts would have the advantage of not being vulnerable to dramatic drops during the years just before planned retirement due to fluctuations in financial markets, this benefit would come at a cost. NDC accounts would not be sustainable if they grow at a rate higher than the rate of increase in the wage sum (total wages). There is evidence to suggest that the marginal return on capital in China over the next few decades will be higher than increases in wages. By one estimate, wages are likely to grow at an average rate of about 7%, while the marginal return on capital will average 12% or higher (Feldstein, 1999; World Bank, 1997). If such estimates prove to be accurate, the aggregate long-term return on the NDC accounts could end up being lower than the corresponding returns on FDC accounts. However, given the high administrative costs associated with small FDC accounts in other countries (Williamson, 2001), such an outcome would be less likely for low-wage workers and those with irregular work histories.

**DISCUSSION AND CONCLUSION**

Were the Chinese government to adopt an NDC scheme (or a multi-pillar scheme with a major NDC pillar), it could be viewed as a
first step toward the eventual introduction of a mandatory FDC pillar covering a much larger proportion of the urban workforce than is presently covered. The rapid introduction of funded individual accounts called for under current statutes would require a major increase in contributions from central government general revenues to finance benefits to those currently retired because of the diversion of some payroll contributions into the new individual accounts. With the PAYGO financing associated with an NDC pillar, the burden could be spread across more age cohorts, making it possible to provide pensions to a larger share of the population with the same yearly level of payroll contributions and central government financing during the transition decades.

The NDC model may prove attractive to Chinese policymakers for a number of reasons. Its transparency would be attractive to workers who have experienced what they consider arbitrary cuts, delay, or denial of benefits. An NDC pillar would also lend itself to pension credit portability when workers move from job to job.

The NDC model provides an incentive for workers to remain in the labor force longer than under most PAYGO DB models. Such a change would be of great help in dealing with China’s projected old-age dependency burden in the decades ahead, but at the cost of exacerbating another problem, the high unemployment rate among young workers. The fear that the NDC model might contribute to higher unemployment rates among younger workers and thus indirectly contribute to labor unrest and political instability may make the model politically unacceptable to many Chinese policymakers.

In many nations, the debate is over whether or not to replace the existing PAYGO DB pillar with an NDC pillar. But in China it makes more sense to consider replacing the largely unfunded FDC second pillar with an NDC pillar than to replace the PAYGO DB first pillar. The second pillar of the Chinese social security scheme is currently a quasi NDC pillar without a number of the strengths that have been incorporated into NDC pillars in countries like Sweden. The PAYGO DB first pillar funds the nation’s minimum income pension. As China has an urgent need for a minimum pension, it would be hard to make the case for replacing the current PAYGO DB pillar with an NDC alternative. However, a much stronger case could be made for replacing the FDC second pillar with an NDC pillar.

One option that in our view might make sense for China would be to start with a model based on three pillars: (1) a mandatory defined benefit minimum pension first pillar financed by a payroll tax on employers
(currently in place); (2) a mandatory NDC second pillar as an alternative to the “funded” pillar currently in place, but, in reality, unfunded for most Chinese employees; and (3) a voluntary FDC third pillar made up of some mix of occupational pensions and personal retirement savings plans as outlined in the 1997 State Council Document 26. At some point, maybe a decade or two from now, it may make sense to introduce a fourth mandatory pillar based on the FDC model. Such a pillar could be added at that point if there is compelling evidence from other less developed countries around the world that such a pillar can work well in nations similar to China with respect to the maturity of their financial markets and institutions. Before any such fourth pillar is added, we would suggest a careful analysis of the likely consequences for economically vulnerable groups, including relatively recent immigrants from rural areas, the self-employed, those working in the informal sector, women, and low-wage workers.

We propose that China transform its DC pillar that is currently a quasi NDC pillar into an actual NDC pillar. If it were to follow the NDC model of Sweden, it could be made to be sustainable, which is not the case with the current quasi NDC pillar (Fox & Palmer, 2001; Keran & Cheng, 2002). It would make sense to set the contribution rate sufficiently high to allow for the creation of a reserve fund for periods when pensions temporarily exceed revenues. To encourage participation (and discourage movement to the informal market) and at the same time to help keep benefits in line with what the system can afford, the notional balances in these accounts should be incremented at a level reflecting changes in the province’s covered wage rate or wage sum (a measure that takes into consideration the number of covered workers and their wage levels). After retirement, annual pension adjustments should take into consideration both the rate of inflation and rates of increase in worker productivity so that retired workers both share the gain and share the pain with those in the labor force. In addition, the starting pension benefit should be based on the unisex life expectancy for those in the worker’s cohort, not on the current formula that implicitly assumes that the average worker will live 10 years after retirement.

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